Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Red Oak Creek and Tributary to Red Oak Creek

Waterbody Segment at a Glance:

County: Gasconade
Nearby Cities: Owensville
Length of impairment:
Red Oak Creek 2 miles
Trib. to Red Oak Creek 1 mile
Pollutant: Volatile Suspended Solids (VSS)
Source: Owensville Wastewater Treatment Plant (WWTP)


State map showing location of watershed

TMDL Priority Ranking: High

Description of the Problem

Beneficial uses of Red Oak Creek and Tributary to Red Oak Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

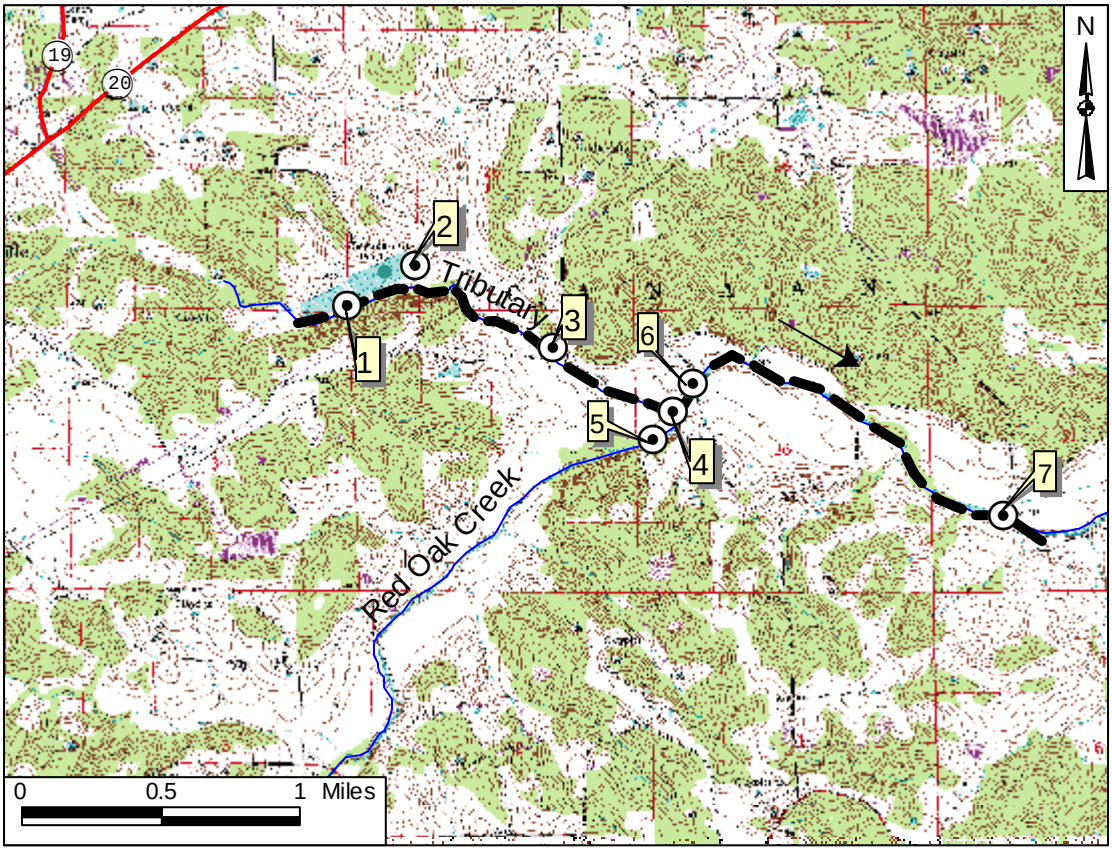
- Standards for VSS may be found in the general criteria section of the Missouri Water Quality Standards, 10 CSR 20-7.031(3)(A) and (C), where it states:
  - Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
  - Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

Background information and Water Quality Data

The City of Owensville's wastewater lagoon was upgraded in 1992, but water quality surveys by the Missouri Department of Natural Resources in 1995 and 1997 found the receiving stream had turbid (cloudy) green water due to high concentrations of suspended algae discharged by the wastewater lagoon. The stream also showed signs of low Dissolved Oxygen (DO) in the morning during low flow conditions. VSS is a measure of the amount of organic matter, like algae, that is part of the Total Suspended Solids in water. VSS settle on natural substrates (materials in the streambed), eliminating

habitat for aquatic invertebrate animals (like water insects and crayfish) and smothering fish eggs. VSS can create an oxygen demand as it is decomposed resulting in low instream DO levels. In 1997, excessive benthic (attached to the bottom) algal growth was also noted. These impacts are judged to be severe enough in three miles of stream to exceed Missouri's water quality standards general criteria for objectionable floating material, bottom deposits, color and for conditions harmful to aquatic life. The department conducted additional water quality studies on Red Oak Creek and its tributary in August 2001 and June 2002. A map of the area and data from these studies may be found below.

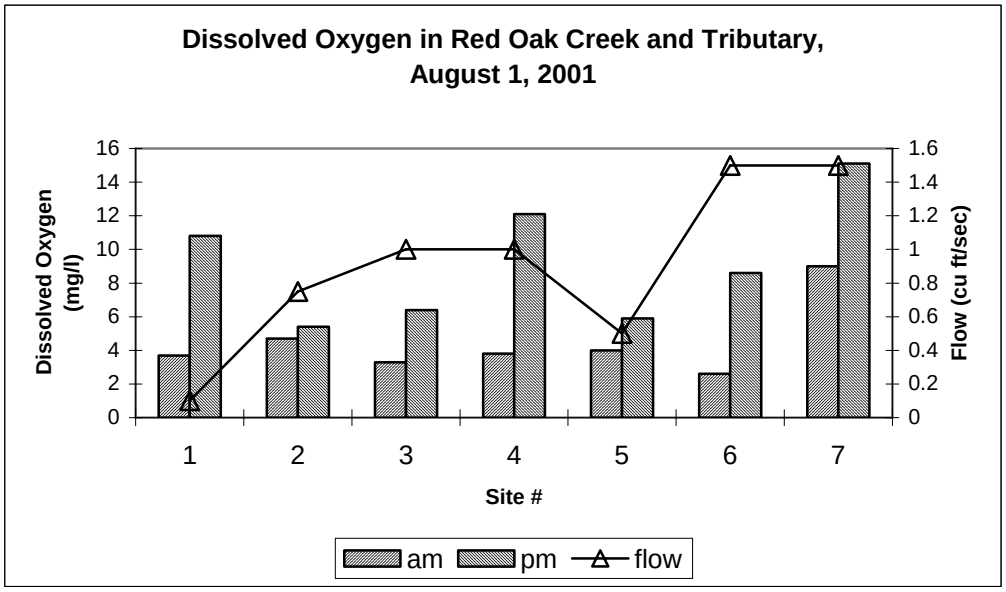
Red Oak Creek and Tributary in Gasconade County, Missouri, with Sampling Sites



Impaired Segment → Direction of Flow

Site Index

1 – Tributary to Red Oak Creek 0.3 mile upstream of Owensville Lagoon outfall
2 – Owensville Lagoon Effluent
3 – Tributary to Red Oak Creek 0.6 mile downstream of Owensville Lagoon outfall
4 – Tributary to Red Oak Creek 1.1 miles downstream of Owensville Lagoon outfall
5 – Red Oak Creek 0.1 mile upstream from Effluent Tributary
6 – Red Oak Creek 0.1 mile downstream of confluence with Tributary
7 – Red Oak Creek 1.5 miles downstream of confluence with Tributary



Source: Missouri Department of Natural Resources

Water Quality in Red Oak Creek and Tributary near Owensville
August 1, 2001

Site #	Flow (cfs)	A.M. Water Temperature (C)	A.M. Dissolved Oxygen (mg/L)	Ammonia (mg/L)
1	0.1	25	**3.7**	0.54
2	0.75	29	**4.7**	0.11
3	1.0	25	**3.3**	1.22
4	1.0	25	**3.8**	0.24
5	0.5	26	**4.0**	0.02
6	1.5	26	**2.6**	0.09
7	1.5	29	9.0	0.02

Bold values are those exceeding state water quality standards.

For more information call or write:
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